NATIONAL HIGH MAGNETIC FIELD LABORATORY

NHMFL

FLORIDA STATE UNIVERSITY

NHMFL ENERGY CONTROL PROGRAM SAFETY PROCEDURE

SP-1

TITLE: SAFETY CLEARANCE PROCEDURE

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NHMFL

FLORIDA STATE UNIVERSITY ENERGY CONTROL PROGRAM SAFETY PROCEDURE

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1.0 PURPOSE

This procedure is the NHMFL Energy Control Program as defined by the Code of Federal Regulations (CFR) 1910.147, **the Control of Hazardous Energy**.

The purpose of this procedure is to ensure that before any employee, user, visitor, contractor, or other person performs any servicing or maintenance on machines, equipment, or systems where the unexpected release of stored energy or the unexpected energization and operation of equipment being serviced or maintained could cause injury, the machine, equipment, or system being serviced or maintained shall be isolated from the energy sources and rendered inoperative.

2.0 SCOPE

This document applies to all personnel working on equipment or systems that are under the control of the NHMFL. It is to be used as part of the NHMFL safety program.

This procedure is to be used by all personnel at the NHMFL, including employees, and contractors. This procedure identifies the specific requirements for the protection of personnel working on facility machinery, equipment, and systems from the hazards due to the unexpected or accidental release of stored or potential energy. This procedure also establishes personnel training requirements and defines the requirements for the periodic inspections and audits of the Energy Control Program.

This procedure shall be used in conjunction with Safety Procedure SP-2; Safety Clearance Administrative Documents.

All requests for non-emergency equipment clearance must be coordinated with the laboratory operating schedule to minimize interference with research experiments.

3.0 RESPONSIBILITIES

3.1 The NHMFL Safety Office will administer and control the Safety Clearance Procedure SP-1 and Safety Procedure SP-2; Safety Clearance Administrative Documents. The NHMFL Safety Office will authorize the appropriate personnel to act as **Issuing Authorities** on an as needed basis.

3.2 An **Equipment Tagout Log** shall be maintained by each **Issuing Authority** for Safety Clearances issued on equipment and systems by them as per Code of Federal Regulations (CFR) 1910.147(c)(4)(i). For instances where a department may have more than one **Issuing Authority** a single **Equipment Tagout Log** is sufficient. This log shall have **all** active Safety Clearance Sheets kept within it. It shall have a master index of all tagouts issued.

The NHMFL Safety Office shall verify **Issuing Authorities** maintain the **Equipment Tagout Log** in accordance with this procedure and Safety Procedure SP-2; Safety Clearance Administrative Documents.

When Safety Clearances are released the Safety Clearance Sheet shall be forwarded to the NHMFL Safety Office by the **Issuing Authority** within 24 hrs, **or by the end of the next scheduled work day.** The released Safety Clearance Sheets are to be filed by the NHMFL Safety Office for a minimum period of three (3) years.

- 3.3 The NHMFL Safety Office shall conduct at a minimum an annual inspection of this procedure and Safety Procedure SP-2; Safety Clearance Administrative Documents to ensure the requirements of these procedures and the requirements established within the Code of Federal Regulations (CFR) 1910.147; Control of Hazardous Energy are being followed.
- 3.4 The NHMFL Safety Office shall ensure employees and contractors, are trained in the purpose, scope, application, and function of this procedure and Safety Procedure SP-2; Safety Clearance Administrative Documents. Personnel working under this procedure shall be competent in the skills required for the safe application, usage, and release of Safety Clearances prior to starting work. The NHMFL Safety Office shall provide for the training of all affected personnel on this procedure.
- 3.5 Employees, users, visitors and contractors shall be retrained in the purpose, implementation, administration, and function of this procedure (as applicable) and Safety Procedure SP-2; Safety Clearance Administrative Documents whenever there is a change in their job assignments, a change in the equipment or systems they operate, or processes that present a new hazard, or when there is revision to this procedure or Safety Procedure SP-2; Safety Clearance Administrative Documents.
- 3.6 The NHMFL Safety Office shall conduct additional retraining of employees, or contractors (as applicable) when ever a periodic inspection or other event indicates there are deviations from or inadequacies in the administration, knowledge, and application of this procedure or Safety Procedure SP-2; Safety Clearance Administrative Documents. This retraining shall reestablish proficiency and introduce new or revised steps of this procedure or Safety Procedure SP-2; Safety Clearance Administrative Documents to the employee, user, visitor, or contractor.
- 3.7 The **Lockout and Tagout** of equipment and systems shall **only** be performed by the authorized employees who will be performing the servicing or maintenance on the equipment.

3.8 When ever contract labor is utilized, the contractor and the NHMFL shall inform each other of the requirements of their respective Safety Clearance Programs (Lockout/Tagout Programs). Contractors may be required to submit documentation of training in a suitable energy control procedure prior to being awarded a contract to work at the NHMFL.

It is the responsibility of the NHMFL personnel who contracted the labor to ensure the requirements, application, administration, and adherence to the provisions of this procedure and Safety Procedure SP-2; Safety Clearance Administrative Documents are maintained by the contractor.

- 3.9 All Boundary Isolation Points shall be Locked Out if the equipment is capable of being locked out. In cases where a locking mechanism is not integral to the equipment design and Lockout is not possible, double tag isolation is required. This means two points of isolation from hazards must be established before work is to progress.
- 3.10 **Master/Boundary Danger Tags** are to accompany all locking devices. No locks or locking devices may be installed on equipment or systems that are not accompanied by **Master/Boundary Danger Tags**.

4.0 **DEFINITIONS**

- 4.1 **Affected Employee** An employee whose job requires him/her to operate or use equipment or systems on which servicing or maintenance is being performed under a Safety Clearance, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.
- 4.2 **Authorized Employee** An employee who locks out or tags out equipment or systems in order to perform servicing or maintenance on that machine, equipment, or system. An Affected Employee becomes an Authorized Employee when that employee's duties include performing servicing or maintenance under a Safety Clearance.
- 4.3 **Requester** A Safety Clearance Requester may be a FSU or NHMFL employee, contractor, City of Tallahassee Electric (COTE) employee, or other person having cause, other than vendor representatives. A Requester becomes an Authorized Employee when the Safety Clearance is Authorized.
- 4.4 **Issuing Authority** An Issuing Authority is responsible for supervising and tracking the implementation of the Safety Clearance Procedure. Their responsibilities include confirming adequate and reasonable isolation from worksite hazards for the work specified in a Safety Clearance request. An Issuing Authority authorizes the establishment of a Safety Clearance on machines, equipment, or systems requiring servicing or maintenance.

Issuing Authorities shall be the following NHMFL personnel: Assistant in Research/Facilities Electrical-Herman Gill, Assistant in Engineering/Operations-Sean Maney, Assistant in Engineering/Facilities Mechanical-Thomas Shewan, Assistant in Engineering/Operations - Ron Verraneault, Assistant in Engineering/Operations - Mike Sabo, Assistant in Research - Bryon Dalton, Assistant in Engineering - Tina Taylor.

The **Issuing Authority** has the ultimate responsibility for determining the safe to work boundaries of equipment, machines, or system Safety Clearances.

Issuing Authorities are the **only** employees authorized to issue a Safety Clearance.

4.5 **Boundary Isolation Point** - A Boundary Isolation Point is any piece of equipment that is used to isolate an employee or work site from hazards associated with the servicing or maintenance on machines, equipment, or systems as a part of this procedure.

Boundary Isolation Points shall have locking devices installed and Boundary Danger Tags hung on them. Locking devices are intended to prevent operation of the Boundary Isolation Point and Boundary Danger Tags are hung to identify the points of hazard for the work identified on a Safety Clearance.

4.6 **Boundary Danger Tags -** Boundary Danger Tags are designed to warn personnel of hazardous conditions. Boundary Danger Tags are warning devices which are affixed to Boundary Isolation Points.

Boundary Danger Tags installed on equipment, machines, or systems indicate that operation of that equipment is hazardous to personnel working on or in the vicinity of the equipment, machine, or system. Installed Boundary Danger Tags indicate that reasonable precautions have been taken to protect personnel working on equipment, machines, or systems from worksite hazards associated with the equipment, machine, or system which is part of the Safety Clearance.

Boundary Danger Tags identify the equipment they are placed on, its required position as part of the Boundary Isolation Points for a Safety Clearance, the date and time the Safety Clearance was issued, and the signature of the person who hung the tag.

4.7 **Master Danger Tags -** Master Danger Tags are considered Boundary Danger Tags. They resemble Boundary Danger Tags in color, markings, and information. They are larger than Boundary Danger Tags to help identify them as Master Danger Tags.

Every Safety Clearance shall have a Master Danger Tag used for identifying one of the Boundary Isolation Points for the Safety Clearance. The Master Danger Tag is to be installed on the piece of equipment which poses the greatest hazard to the employee, user, visitor, or contractor. The Master Danger Tag is used to aid tracking of multiple jobs under a common set of Boundary Isolation Points. Every job listed on a Safety Clearance is to be "permitted" with a Master Danger Tag.

Master Danger Tags have a Stub attached on the bottom of the tag. The Master Danger Tag Stub is to be torn off when the tag is hung and retained in the possession of the Authorized Employee working under the Safety Clearance until such time as the Safety Clearance is ready to be released.

Master Danger Tags identify the equipment they are placed on, it's required position as part of the Boundary Isolation Points for a Safety Clearance, the date and time the Safety Clearance was issued, the signature of the person who hung the tag, and an identifying sequential number.

5.0 SAFETY CLEARANCE PROCEDURE

5.1 General

- 5.1.1 Tags used to indicate operational authority and other non-specified NHMFL tags shall not be considered Boundary Danger Tags. These tags must not resemble **Boundary Danger Tags** in color or markings.
- 5.1.2 A Safety Clearance on equipment signifies that the equipment or system has been rendered safe for the specific work specified on the Safety Clearance Sheet. It does not, in itself, verify that the worksite is actually free of all hazards. This shall be verified by the Affected Employee, Authorized Employee, and Issuing Authority. The Safety Clearance does not ensure that other work on the same equipment will be free of all hazards. This determination must be made by the appropriate authorized personnel at the worksite. The Affected Employee, Authorized Employee and Issuing Authority shall determine that the energy source equipment and/or system has been removed for the specific work specified on the Safety Clearance Sheet.
- 5.1.3 Systems or equipment under a Safety Clearance may not be operated, pressurized, energized, or electrically tested by anyone other than the Authorized Employee.
- 5.1.4 No servicing or maintenance on equipment, machines, or systems may be performed unless a proper Safety Clearance has been established.
- 5.1.5 The NHMFL Safety Office stocks and distributes all tags, locks, locking devices, and other equipment as may be necessary to establish a proper Safety Clearance.

NHMFL supplied locks to be used for Safety Clearances will be issued to authorized employees.

There shall be <u>only one</u> key distributed by the NHMFL Safety Office for locks used for Safety Clearances. The **Authorized Employee** installing a lock or locking device shall keep the key or other means of removing that lock or locking device in their possession <u>at all times</u> while the Safety Clearance is in effect.

5.1.6 If an employee holding a Safety Clearance forgets to release it immediately following the completion of work and goes home or becomes unavailable, and the Safety Clearance needs to be released to support facility operation, the employee is to be notified and required to return to work to release the Safety Clearance.

If a Safety Clearance needs to be released to support facility operation and the employee holding that Safety Clearance is absent from the work place due to prolonged illness, serious injury, personal vacation, forced or voluntary leave of absence, termination of employment, or the like and can be verbally communicated with by his/her Supervisor then a Safety Clearance may be released by the **Authorized Employee's** Supervisor.

The **Authorized Employee's** Supervisor shall thoroughly inspect the affected area prior to releasing the Safety Clearance and sign in the "Released By" block of the Safety Clearance Sheet for the absent **Authorized Employee.** This may be done following verification by the use of a phone, two way radio, or other electronic means with the **Authorized Employee** that the job or jobs listed on that Safety Clearance under his Master Tag Stub number are complete and the Safety Clearance is safe to release.

In cases where it is not possible to communicate with an absent or unavailable **Authorized Employee** who holds a Safety Clearance and that Safety Clearance needs to be released to support facility operation then the Safety Clearance may be released by that **Authorized Employee's** Supervisor. The Supervisor releasing the Safety Clearance shall:

- 1. Ensure that all reasonable means of communication with the **Authorized Employee** have been exhausted and the employee is unavailable.
- 2. Ensure the jobs associated with that Safety Clearance are complete and the equipment and systems are safe to return to service.
- 3. Personally ensure that the **Authorized Employee** is aware the Safety Clearance has been released, locking devices have been removed, Boundary Danger Tags have been removed, and the equipment or system has been returned to a "Ready To Run" state.

This communication must occur the next work day the employee is present and prior to that employee resuming work.

All other employees involved with work being performed under that Safety Clearance must be notified also prior to them resuming work at that worksite.

5.1.7 Only the **Issuing Authority** identified in the "Issued By" block of the Safety Clearance Sheet may release that Safety Clearance.

In the case where the **Issuing Authority** is not available due to injury, illness, vacation, etc., other **Issuing Authorities** may authorize the release of the Safety Clearance. The substitute **Issuing Authority** must see that the **Equipment Tagout Log** used by the originating **Issuing Authority** is updated in accordance with Safety Procedure SP-2; Safety Clearance Administrative Documents and the released Safety Clearance Sheet is forwarded to the NHMFL Safety Office within 24 hrs (one working day).

5.2 The procedural steps for obtaining a Safety Clearance are:

Step 1: **Requester:**

The **Requester** shall identify workplace hazards associated with their work, identify Boundary Isolation Points, and properly complete the Safety Clearance Sheet, Master Danger Tag, and Boundary Danger Tags. See Safety Procedure SP-2; Safety Clearance Administrative Documents.

The **Requester** requests approval of a Safety Clearance from an **Issuing Authority**. The request should be made 24 hours in advance when possible.

Step 2: **Issuing Authority:**

Receives the Safety Clearance request.

Determines if the request will impact scheduled operations.

The **Issuing Authority** will review system and equipment operational requirements and determine if a Safety Clearance can be issued.

The **Issuing Authority** then reviews the Safety Clearance for reasonable and adequate boundary isolation points to determine and ensure the work site is free from hazards associated with equipment servicing or maintenance to be performed under the Safety Clearance.

The **Issuing Authority** determines the Safety Clearance Number from his/her **Equipment Tagout Log**, see Safety Procedure SP-2; Safety Clearance Administrative Documents. The **Issuing Authority** adds the Safety Clearance Number to the Safety Clearance Sheet and then signs the Safety Clearance in the "**Issued By**" block of the Safety Clearance Sheet. Safety Clearances are authorized and issued when the **Issuing Authority**

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signs the "Issued By" block on the Safety Clearance Sheet. See Safety Procedure SP-2; Safety Clearance Administrative Documents.

The **Requester** now becomes an **Authorized Employee**.

Equipment may now be de-energized, repositioned, or otherwise manipulated by the **Requester** (**Authorized Employee**) to release or isolate stored or potential energy hazards. Locking devices and Master/Boundary Danger Tags may now be installed and hung by the **Requester** (**Authorized Employee**).

Step 3: **Requester:**

Once a Safety Clearance is authorized by the **Issuing Authority** the **Requester** becomes an **Authorized Employee** and is allowed to reposition equipment, realign systems, and install locking devices and Master/Boundary Danger Tag(s) on affected equipment, machines or systems as necessary.

The **Authorized Employee** shall tear off the **Master Danger Tag Stub** from the Master Danger Tag when it is hung on a Boundary Isolation Point. The **Authorized Employee** shall maintain in his/her possession the **Master Danger Tag Stub** while the Safety Clearance is in effect.

The **Authorized Employee** shall assure himself/herself that isolation boundaries are properly established and aligned, and that **Master/Boundary Danger Tag(s)** are correctly installed in accordance with the Safety Clearance Sheet before any work commences.

Once equipment has been repositioned, locking devices and Master/Boundary Danger Tags have been installed, a **qualified operator** shall attempt to operate the equipment from the normal control station or verify that the equipment cannot be restarted. If working on electrical circuits they shall be checked to ensure they are deenergized using appropriate voltage or current measuring instruments and equipment (as appropriate) which is intended for that purpose and which is rated for the normal voltage of the circuit or system. Mechanical and hydraulic hazards shall be vented, drained, blocked, braced, or isolated by other appropriate means and verified by the **Authorized Employee** to be isolated from the work site, machine, equipment, or system before work is started.

5.2.1 The **Authorized Employee** shall affix locking devices and/or locks to <u>all</u> Boundary Isolation Points. The **Authorized Employee** must inform the **Issuing Authority** if a lock cannot be used.

If equipment or systems do not provide locking devices and the **Boundary Isolation Points** cannot be locked, then an additional **Boundary Danger Tag** must be hung that provides the safety level equivalent of the lock.

This additional **Boundary Danger Tag** shall be hung on the next upstream opened disconnect or blocked open control device. If an unlockable circuit breaker is to be danger tagged open, the circuit breaker may be racked out of the switch gear with the switch gear cubicle cover danger tagged "closed with the circuit breaker removed" in order to satisfy the second danger tag requirement. If the circuit breaker will not be removed from the cubicle, then the racking mechanism will be danger tagged in the open position.

If a locking device does not exist on the equipment or if a lock is not utilized, work will be accomplished by "double isolation" of the equipment with Boundary Danger Tags.

The **Authorized Employee** shall issue instructions to any **Affected Employees** working near or under his Safety Clearance, identifying the hazards peculiar to the equipment or work area and the personal protective equipment required.

The Authorized Employee is responsible for the safety of Affected Employees working within or near established isolation boundaries of a Safety Clearance.

The **Authorized Employee** can now proceed with the servicing or maintenance on the equipment or system under the Safety Clearance.

Step 4: Authorized Employee: (Completion of work)

The **Authorized Employee** holding a Safety Clearance shall report the completion of work and return the Master Danger Tag Stub to the **Issuing Authority** as soon as his/her work is completed.

The **Authorized Employee** must ensure the work is complete and the equipment and systems are repaired and the machine, equipment, or system is ready for service. Any tools or equipment, trash and debris, are to be removed from the work area by the **Authorized Employee** upon completion of servicing or maintenance prior to release of Safety Clearance Tag.

The Authorized Employee signs the "Released By" block on the Safety Clearance Sheet and turns in the Master Danger Tag Stub to the Issuing Authority.

Step 5: Issuing Authority

Issuing Authorities are the **only** employees authorized to release a Safety Clearance.

The **Issuing Authority** upon receipt of a Master Danger Tag Stub from an **Authorized Employee** will authorize the release of the Safety Clearance by signing in the "Authorized for Release" block on the Safety Clearance Sheet. The **Issuing Authority** will add the date and time released to the Safety Clearance Sheet in the appropriate block of the Safety Clearance Sheet.

Letters of Transfer, if applicable see 7.1 and the Master Danger Tag Stub are to be stapled to the released Safety Clearance Sheet.

The **Issuing Authority** must forward the released Safety Clearance Sheet, Letters of Transfer, and the Master Danger Tag Stub to the NHMFL Safety Office within 24 hrs (one working day).

Step 6: Authorized Employee:

When a Safety Clearance has been released by the **Issuing Authority**, the **Authorized Employee** is authorized *and required* to remove all locking devices, locks, and Boundary Danger Tags; and to reposition equipment or systems as required, and return the equipment to a "ready to run" state.

Prior to energizing equipment there shall be a visual determination that all employees are clear of that equipment. This includes an equipment or system walk-down by qualified personnel. This walk down shall include verifying that system electrical and mechanical equipment alignment are in normal or approved test positions.

All locks and locking devices are to be returned to the NHMFL Safety Office at the completion of the assigned work task.

6.0 PRECAUTIONS AND ADDITIONAL GUIDANCE

Under NO circumstances will NHMFL equipment or systems be locked out for servicing or maintenance WITH OUT a Master/Boundary Danger Tag(s) being hung on the equipment or system and a proper Safety Clearance issued for the servicing or maintenance of the machine, equipment, or system.

Multiple jobs may be worked under common boundaries if the common boundaries provide a safe to work environment for **Authorized** and **Affected Employees** working on those jobs.

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In the case of multiple job listings under a single Safety Clearance each job must be permitted with it's own Mater Danger Tag and Stub.

No **Requester** (employee, contractor) shall work under a Safety Clearance issued to another **Authorized Employee** unless the job is added to a Safety Clearance, a Master Danger Tag is added to the Safety Clearance as a **Boundary Isolation Point**, and they receive a Master Danger Tag Stub for the servicing or maintenance work they are to be performing.

A Supervisor holding a **Group Safety Clearance** with multiple jobs in progress, with a fixed set of Boundary Isolation Points, is fully responsible for the safety of all **Affected Employees** working under that Safety Clearance.

Master Danger Tags may not be substituted for Boundary Danger Tags when multiple jobs occur under a single Safety Clearance. The multiple Master Danger Tags are to all be hung on the same piece of equipment. This should be a singular piece of equipment within the Safety Clearance's Boundary Isolation Points which poses the greatest threat to life and limb. All other Boundary Isolation Points shall have a Boundary Danger Tag hung on them.

Deviation from this concept seriously diminishes the integrity of the Safety Clearance program.

- 6.2 **Group Safety Clearances** are allowed when primary responsibility is vested in a single **Authorized Employee** for a crew, craft, or department. **Group Safety Clearances** are permitted to facilitate the coordination of work by maintenance groups during events such as Annual Outages.
 - Each Affected Employee working under a Group Safety Clearance shall affix personal locks to Boundary Isolation Point group lockout devices when he/she begins work and shall remove his/her locks when his/he work is complete.
- 6.3 Under no circumstance shall any valve, part of a control circuit, starter, or breaker, or other equipment have a locking device or lock removed, be energized or operated, or manipulated in anyway, if a Boundary Danger Tag is hung on that equipment.
- A Safety Clearance is not to be used to keep equipment out of service unless the operation of that equipment poses a threat to life or limb. Safety Clearances are issued for the safety of personnel working at the NHMFL.
- All **Boundary Danger Tags** must be removed and accounted for by the **Authorized Employee** holding the Safety Clearance when a Safety Clearance is released. Removed Boundary Danger Tags are to be destroyed. The **Master Danger Tag Stub** is to be retained and returned to the **Issuing Authority**. The Master Danger Tag Stubs shall be stapled to the Safety Clearance Sheet.
- 6.6 All personnel requiring access to the roof shall contact the NHMFL Safety Office prior to accessing the roof. Any necessary Safety Clearances shall be issued as required.

7.0 CLEARANCE TRANSFER

- 7.1 When a Safety Clearance is originally authorized for a **Requester** and the job is to be continued by another crew, craft, or employee, the Safety Clearance must be transferred to the new **Requester**. The original **Authorized Employee** holding the Safety Clearance shall affix his signature on and record the clearance number, time, and date on the **Letter Of Transfer**. See Safety Procedure SP-2; Safety Clearance Administrative Documents.
- 7.2 When a new **Requester** accepts a Safety Clearance belonging to another, the new Requester must check the equipment or system **Boundary Isolation Points** and sign the "Accepted By " block on the **Letter Of Transfer**. The **Letter Of Transfer** must be turned over to the to the **Issuing Authority**. The **Letter Of Transfer** shall be stapled to the Safety Clearance Sheet. **Any keys to locks or locking devices shall be transferred from the original requester to the new requester.**

8.0 LOSS OF A MASTER DANGER TAG STUB

A Master Danger Tag Stub that is lost requires notification of the **Issuing Authority**.

9.0 BOUNDARY ISOLATION POINT

9.1 **Computer Lockout**

The OPMD Building Control Room, Distributed Control System (DCS) computer has the operational capability for assigning software lockouts on equipment under its control. This is an operator aid and is not to be used as a source of hazard isolation for a Safety Clearance.

9.2 Mechanical Boundary Isolation Point Guidelines

- 9.2.1 For maintenance on mechanical systems the Safety Clearance **Boundary Isolation Points** shall include the breaker of any rotating equipment included in the scope of work or equipment within the Safety Clearance Boundary Isolation Points that would be damaged if started.
- 9.2.2 For 480 volt Motor Control Center breakers, the breakers will be **Boundary Danger Tagged** open. Control fuses may be pulled as part of the isolation and shall be noted on the Clearance Sheet. **Boundary Danger Tag** shall be generated for "Fuses Pulled" and hung locally at the point the fuses are normally installed. Locking devices and locks shall be installed if possible.
- 9.2.3 For 480 volt switch gear, the breaker shall be positioned and **Boundary Danger Tagged** "Open And Racked To Disconnect". Locking devices and locks will be installed.

9.2.4 For medium voltage equipment circuit breakers and switch gear the breaker shall be positioned and **Boundary Danger Tagged** "Open And Racked To Disconnect". Locking devices and locks shall be installed.

Any time switch gear circuit breakers are racked out and physically removed from the switchgear cubicle, the actuating springs must be verified discharged before beginning servicing or maintenance.

9.2.5 For systems under pressure, such pressure will be relieved as part of the Safety Clearance. This can be accomplished by opening and **Boundary Danger Tagging** open vent and drain valves, breaking open and tagging open flange unions, etc. to relieve internal system pressure

Systems with pressures greater than 80 psi and 110 °F that cannot be de-pressurized and cannot have locking devices and locks installed as part of the Safety Clearance must have two valve isolation between personnel and the pressure or temperature source as part of the Safety Clearance.

9.3 Electrical Boundary Isolation Point Guidelines

- 9.3.1 While any **Authorized Employee** is working on equipment that has the possibility of being energized electrically, the circuits supplying power to such equipment shall be de-energized and **Boundary Danger Tagged** in accordance with this procedure.
- 9.3.2 For maintenance on electrical systems, breakers will be racked to disconnect, racked out of the cubicle, and electrical bussing de-energized, as appropriate, to ensure safety of personnel.

All conductors and electric equipment that have been de-energized but have not been Boundary Danger Tagged shall be treated as energized parts.

- 9.3.3 Once equipment has been repositioned, locking devices and **Boundary Danger Tags** have been installed, a qualified operator shall attempt to operate the equipment from the normal control station to verify that the equipment cannot be restarted.
- 9.3.4 Once servicing or maintenance is complete and prior to releasing the Safety Clearance, the **Authorized Employee** will ensure that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed.

This is performed to ensure that the equipment worked on can be safely energized. Once this verification is made the **Issuing Authority** will

authorize the release of the Safety Clearance, locks, and **Boundary Danger Tags** associated with the Safety Clearance. The **Authorized Employee** may then remove Safety Clearance, locks, and boundry tags.

In cases where jumpers, fuses, grounds, or other such devices are part of the Boundary Isolation Points of a Safety Clearance, the equipment may not be removed, operated, or manipulated in any way until the Safety Clearance has been released by the Issuing Authority.

- 9.3.5 Prior to energizing equipment there shall be a visual determination that all employees are clear of that equipment. This includes an equipment or system walk down by qualified personnel. This walk down shall include verifying that system electrical and mechanical equipment line-ups are in normal or approved test positions.
- 9.3.6 The **Authorized Employee** shall affix locking devices and/or locks to <u>all</u> Boundary Isolation Points. The **Authorized Employee** must inform the **Issuing Authority** if a lock cannot be used.

If equipment or systems do not provide locking devices and the **Boundary Isolation Points** cannot be locked, then an additional **Boundary Danger Tag** must be hung that provides the safety level equivalent of the lock.

This additional **Boundary Danger Tag** shall be hung on the next upstream opened disconnect or blocked open control device. If an unlockable circuit breaker is to be danger tagged open, the circuit breaker may be racked out of the switch gear with the switch gear cubicle cover danger tagged "closed with the circuit breaker removed" in order to satisfy the second danger tag requirement. If the circuit breaker will not be removed from the cubicle, then the racking mechanism will be danger tagged in the open position.

If a locking device does not exist on the equipment or if a lock is not utilized, work will be accomplished by "double isolation" of the equipment with Boundary Danger Tags.

9.3.7 If more that one maintenance task requires a common isolation boundary, subsequent locks can be "ganged" together for individualized safety. All locks placed on any equipment must be **NHMFL supplied locks**.

ONLY NHMFL SUPPLIED LOCKS, LOCKING DEVICES, TAGS AND ASSOCIATED HARDWARE ARE TO BE UTILIZED.

9.3.8 Locks installed as part of Safety Clearance boundaries are not to be removed unless the Safety Clearance is released by the **Authorized Employee** and authorized for removal by the **Issuing Authority**. During the transfer of Safety Clearance responsibility, the locks will stay in place on the equipment. **The key to the locks shall be transferred to the new**

requester and shall be noted in the Safety Clearance Log. Locks will only be removed when work is complete.

10.0 TESTING REQUIREMENTS:

In instances where equipment or systems must be energized for testing or positioning purposes where locks, locking devices, and Boundary Danger Tags need to be removed from Boundary Isolation Points the following sequence of actions must be followed. This work is to be done by Authorized Personnel Only.

- 10.1 The machine, equipment, or system must be cleared of all tools, debris or other material which might interfere with its operation. Non essential items are to be removed and the machine, equipment, or system operational components ensured to be intact and ready for operation.
- The work area shall be verified to be clear of all employees, users, visitors, contractors, or other personnel who are nonessential to the testing.
- 10.3 The locks, locking devices, and Boundary Danger Tags may now be removed.
- The equipment may now be energized, tested, or manipulated as necessary for completion of the testing.
- 10.5 When testing is complete all machines, equipment, or systems must be deenergized. The Boundary Isolation Points must be reestablished before any further servicing or maintenance is initiated.

11.0 APPENDIX

Copies of the administrative documents used with the NHMFL Safety Clearance Procedure are included on the following pages.

11.1	Clearance Sheet	Page 15,16
11.2	Safety Clearance Summary Index	Page 17
11.3	Letter of Transfer	Page 18
11.4	Master Danger Tag and Boundary Danger Tag	Page 19

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TAG #		ARY TAG ATION	POSITION	HUNG BY (INT.)	POSITION UPON REMOVAL	AUTHORIZED FOR RELEASE	REM BY (

TAG #	BOUNDARY TAG LOCATION	POSITION	HUNG BY (INT.)	POSITION UPON REMOVAL	AUTHORIZED FOR RELEASE	REM BY
						1
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+						
+						

NHMFL FLORIDA STATE UNIVERSITY SAFETY CLEARANCE SUMMARY INDEX OPSPRO SP-2

Clearance #	Equipment	time/date active	time/date cleared

NHMFL FLORIDA STATE UNIVERSITY LETTER OF TRANSFER OPSPRO SP-2

CLEARANCE NUMBER:

TRANSFERRED			ACCEPTED			JOB
FROM	DATE	TIME	BY	DATE	TIME	DESCRIPTION
		•		•	•	
TDANGEEDDED		1 1	ACCEPTED	1	.	JOB
TRANSFERRED FROM	DATE	TIME	ACCEPTED BY	DATE	TIME	DESCRIPTION
FROM	DATE	1 11/117	D1	DATE	TIMIL	DESCRIPTION
		<u> </u>				
TRANSFERRED		T I	ACCEPTED	T	<u> </u>	JOB
FROM	DATE	TIME	BY	DATE	TIME	DESCRIPTION
TROM	DATE	1111112	D1	DATE	1111112	DESCRIT TION
		•		•	•	
TDANGEEDDED		1	ACCEPTED	1	1	TOD
TRANSFERRED FROM	DATE	TIME	ACCEPTED BY	DATE	TIME	JOB DESCRIPTION
FROM	DATE	THVIE	D 1	DATE	THVIE	DESCRIPTION
		1		1		
TRANSFERRED	D 4 11111		ACCEPTED			JOB
FROM	DATE	TIME	BY	DATE	TIME	DESCRIPTION
		<u> </u>			<u> </u>	
TRANSFERRED			ACCEPTED			JOB
FROM	DATE	TIME	BY	DATE	TIME	DESCRIPTION
		1		1	<u> </u>	
TRANSFERRED		, , , , , , , , , , , , , , , , , , ,	ACCEPTED	1	<u>.</u>	JOB
FROM	DATE	TIME	ACCEPTED BY	DATE	TIME	DESCRIPTION
TROM	DAIL	1 11/117	וע	DAIL	1 11/117	DESCRIPTION
		<u>. </u>				

DANGER DO NOT OPERATE

CLEARANCE #:
SIGNATURE:
DATE:
SEQ. NUMBER:
SIGNATURE:
DATE:
SEQ. NUMBER:

(BACK OF STUB)

BOUNDARIES					
1 _	6				
2 _	7				
3 _	8				
4	9				
5 _	10				

DANGER

DO NOT OPERATE

DATE:

SIGNED BY:

A. Master

B. Boundary

Danger Tags

SAFETY PROCEDURE SP-1